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GB A 2036465

GB 1571544

GB 1202661

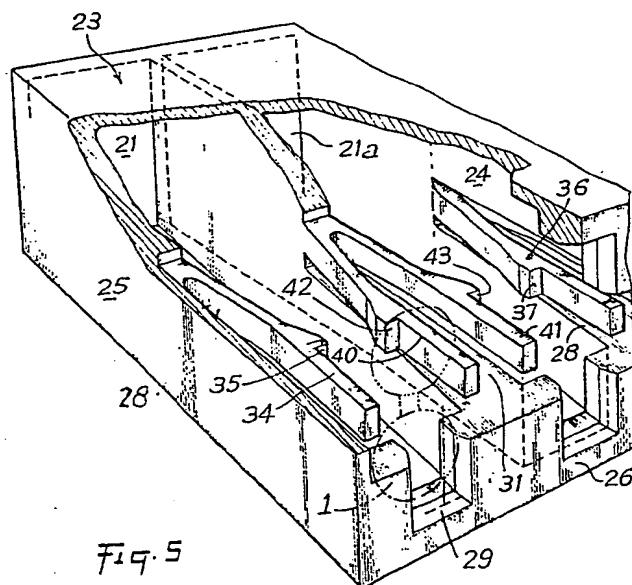
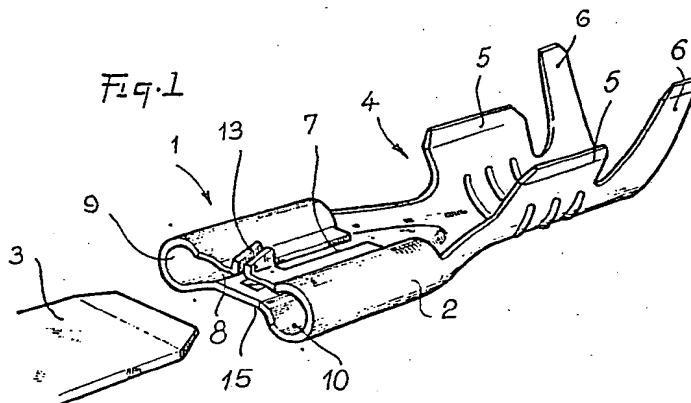
GB 1139729

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(58) Field of search
H2E

(54) Latching electrical contact into
connect r body

(57) A electrical connector comprises a box (23) with a series of channels (21, 21a) emerging into openings in the front wall (26), each intended to receive a female contact (1). Each channel has (a) spring latches (34,40; 36,41) which cooperate with the contact (1) (b) a cross section greater than that of the contact and (c) flares gradually from the front wall (26) towards the opposite end of the box. Openings in the front wall (26) are dimensioned less than the ends of the contact members so that the contact members are axially retained but can work sideways (i.e. are retained with play).



1/2

FIG. 1

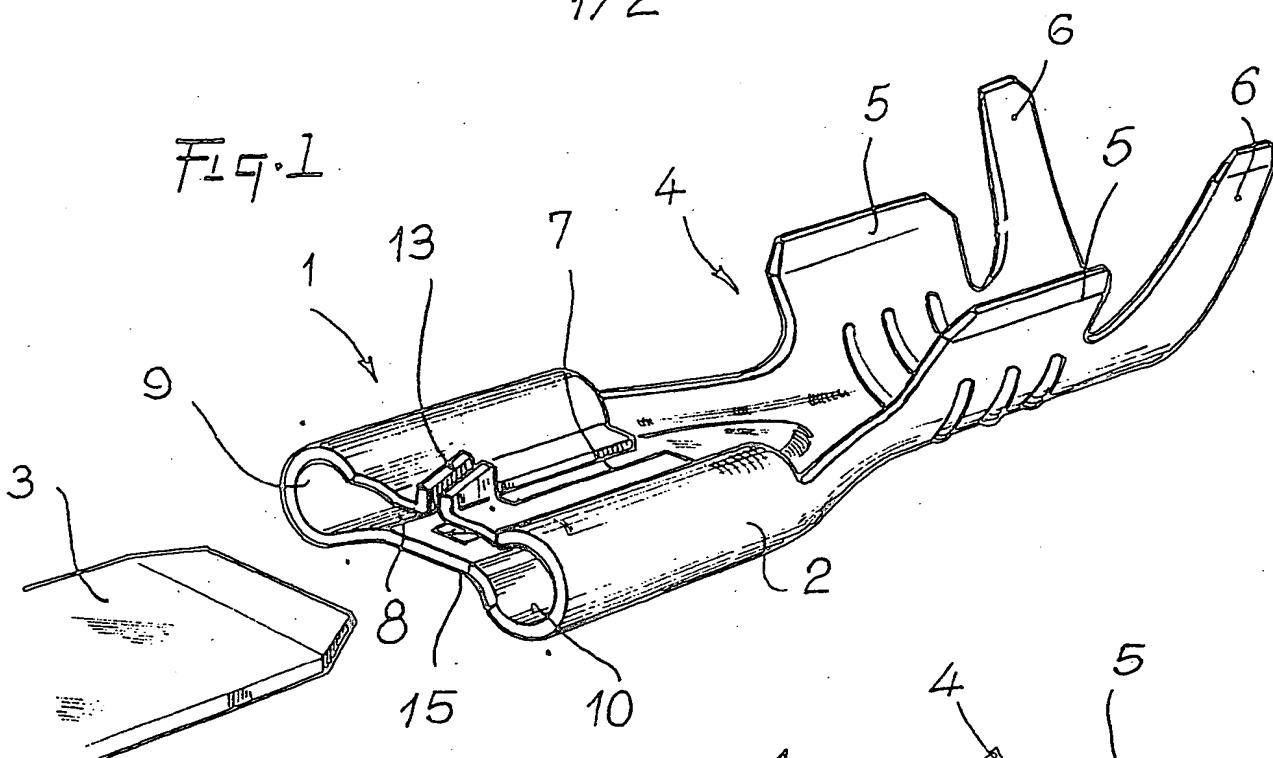


FIG. 2

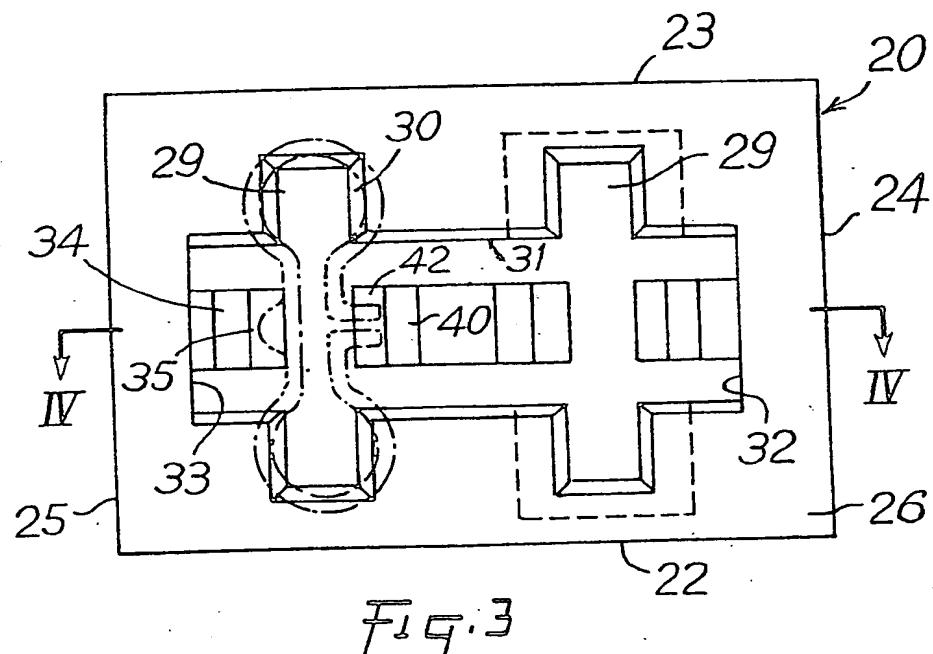
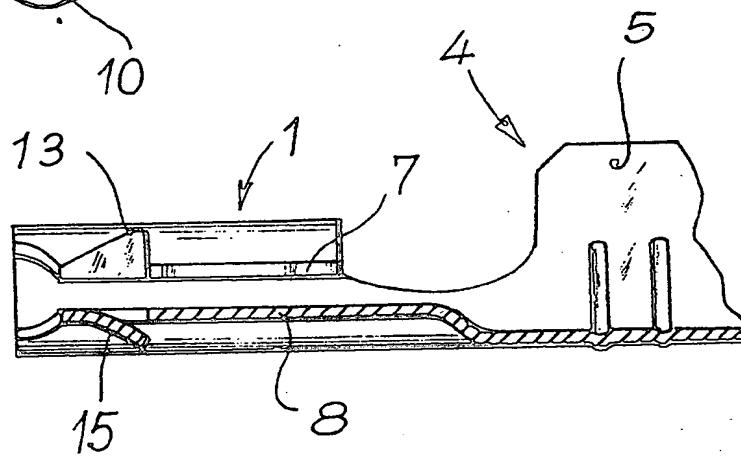
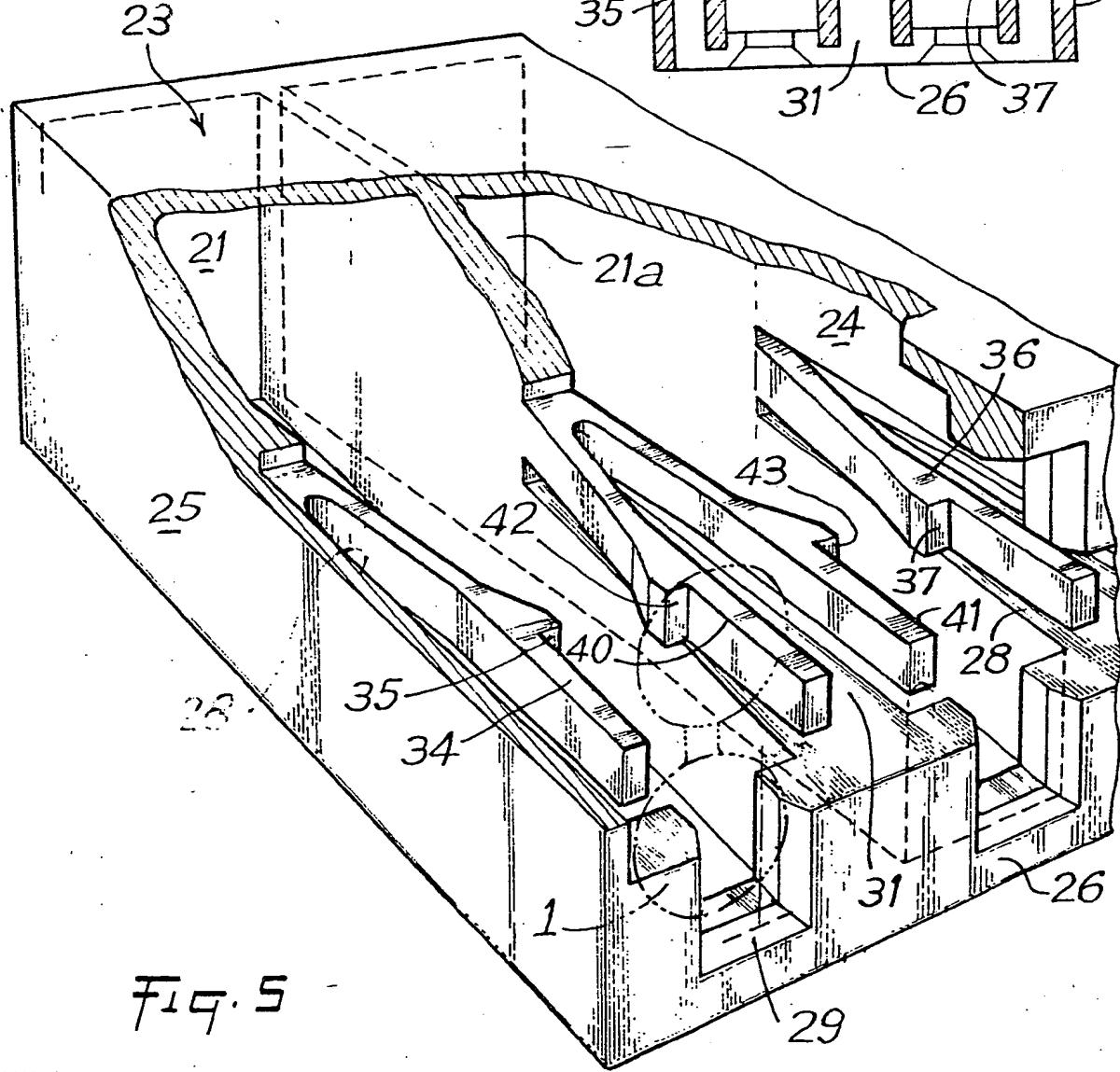
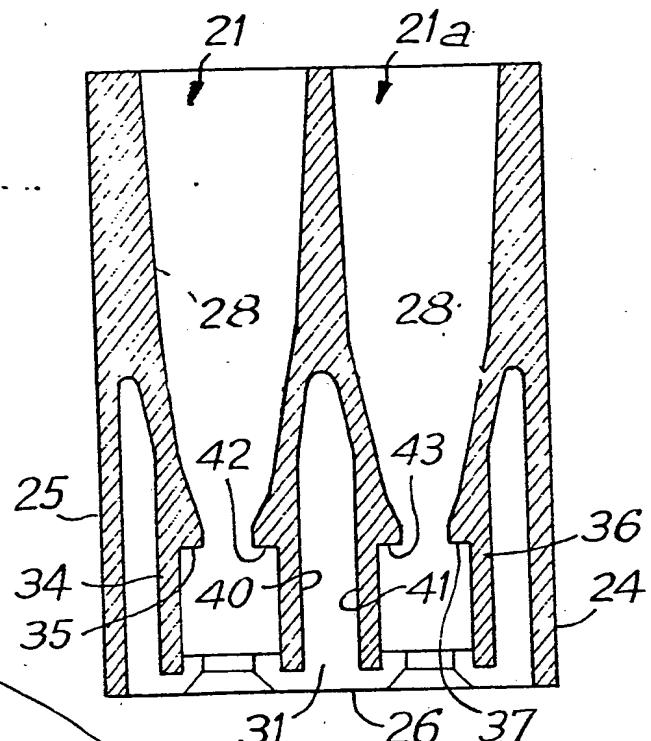


FIG. 3

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SPECIFICATION

Electrical Connector

- 5 The present invention relates to an electrical connector.
 The invention is concerned with an electrical connector of the type comprising an insulating body including a series of channels, each channel 10 being intended for receiving a female electrical contact member.
 The invention is aimed mainly at connectors which are intended for cooperating with a plate or a corresponding box element provided with a series of male electrical contact members intended 15 for being inserted into the female electrical contacts.
 One of the difficulties of these connections lies in the fact that in order that the insulating body may 20 be put in place with ease it is necessary for the male members to be presented perfectly aligned with the female members. However, during the course of various manipulations it frequently happens that one male member of a series is slightly 25 twisted so that the putting into place of the insulating body cannot be effected without the male member having previously been straightened up.
 One of the aims of the present invention is to provide a connector which is enabled to be 30 mounted upon a series of male members even if the latter are not exactly aligned with the female members.
 The connector in accordance with the invention is of the type formed from an insulating box having 35 a front wall which emerge into the openings in the front wall and are intended each for receiving one female electrical contact member, each channel including two springy feet exhibiting retention members intended for cooperating with corresponding retention members on the electrical contact member in order to ensure the retention of the latter when they are put in place, the said connector being characterised in that each channel has a cross-sectional dimension greater than that of the 40 electrical contact member and flares gradually from the front face towards the opposite end of the box, the said electrical contact member exhibiting a flared opening at the end of it turned towards the front face, the openings in the said front face having dimensions less than those of the corresponding ends of the electrical contact members so that the latter are retained axially between the retention members on the springy feet and the front face, but they can work sideways.
 45 Thanks to this arrangement the female electrical contact members will be able to align themselves with the male contact members and the connector will be able to be put into place even if the male members are not aligned.
 In accordance with yet another characteristic, 50 each springy foot exhibits a step turned towards the front face, whilst each female member exhibits a corresponding lug on two opposite faces, the said lugs being situated in the vicinity of the free 55 ends of the said female members.

Finally in accordance with the last structural characteristic, each female member is produced from a strip of metal which is a good conductor of electricity, suitably cut out and folded in order to exhibit a flat tubular element bordered by two rounded portions, the end opposite to that provided with the flared opening including means of connection to an electrical conductor.
 The invention will now be described in greater detail by referring to a particular embodiment given by way of example only and represented in the attached drawings in which:
Figure 1 is a perspective of a female contact member;
 70 *Figure 2* is a longitudinal section of the member as Figure 1;
Figure 3 is a front elevation of a connector box in accordance with the invention;
Figure 4 is a section along the line IV-IV in Figure 75 3; and
Figure 5 shows in perspective a box element intended for containing female members such as those in Figures 1 and 2, the said box element being shown partly cut away.
 80 In Figures 1 and 2 a female member is represented which is designated by the general reference number 1 and which comprises a tubular element 2 intended for receiving a flat male contact member 3, and an extension 4 exhibiting feet 5 and 6 for clamping onto an electrical conductor which has previously been bared.
 The tubular element exhibits two parallel flat portions 7 and 8 connected together by two rounded portions 9 and 10, the latter having cross-sections such that they project with respect to the portions 7 and 8. The free end of the tubular element 2 is flared.
 On the flat portion 7 in the vicinity of the free 90 end are shaped two locking lugs 13 whilst the flat portion 8 is punched through to form a locking lug 15, the lugs 13 and 15 being situated in one and the same plane perpendicular to the longitudinal axis.
 In Figures 3 to 5 is represented a box element 100 designated as a whole by the reference 20 and intended for receiving female members like that in Figure 1 and 2. The box element 20 as shown comprises two channels 21 and 21a each intended for receiving one member 1 but of course in practice such a box will include a large number of channels.
 The box element 20 is produced from insulating material and displays a generally parallelepipedal shape with bottom wall 22, a top wall 23, two sidewalls 24 and 25 and a front wall 26.
 Each channel 21 is bounded by partitions 28 which gradually approach one another from the rear end towards the front wall 26.
 The front wall 26 includes two openings 29 110 which are bordered by a chamfer 30, these openings being connected together by a slot 31. There are likewise provided two slots 32 and 33 aligned with the slot 31, one connecting the opening 29 to the sidewall 24 and the other connecting the other opening 29 to the sidewall 25.
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From the sidewall 25 in the direction of the front wall 26 extends a springy foot 34 which in the vicinity of its free end includes a ramp terminating in a step 35.

5 The sidewall 24 includes a springy foot 36 identical with the foot 24 with a step 37.

The box element 20 is further provided with two springy feet 40 and 41, the foot 40 being situated opposite the foot 34 whilst the foot 41 is arranged 10 facing the foot 36, these feet 40 and 41 exhibiting steps 42 and 43 respectively arranged at the level of the steps 35 and 37 and both extending from the central partition 28.

The feet 34, 40, 41 and 36 can spring freely and 15 are intended for the fixing of the female contact members 1.

The separation of the springy feet 34, 40 and 41, 36 is less than the thickness of the members 1 at right angles to the flat portions 7 and 8.

20 One member 1 is introduced into the channel 21 so that the lug 13 comes to cooperate with the step 35 or 42 whilst the lug cooperates with the other step.

The second channel 21a is intended for receiving 25 a second member 1, the lugs 13, 15 on which cooperate with the steps 37, 43.

As may be seen in the Figures, the members 1 are retained partly by the free ends of the rounded portions 9 and 10 which can butt against the inner 30 face of the face 26 round the slots 29, and by the steps 35, 42, 43 and 37 which cooperate with the lugs 13, 15, though a certain play is arranged in order that the members 1 may work, that is to say, that the distance separating the inner face of the 35 front wall 26 from the steps 35, 42, 43 and 37 is greater than the distance lying between the active faces of the lugs 13, 15 and the free end of the member 1.

The minimum passage between the partitions 28 40 situated at the level of the inner face of the wall 26 is greater than the thickness of the member 1, thus defining a play of the member 1 in the channel 21-21a which is compatible with the width of the slot 29 in order to ensure the entry of the member 3 45 into the flare in the member 1. The slope of the partitions 28 enables the members 1 to tilt about the lugs 13, 15 while bearing against one of the steps 35, 37, 42 or 43.

It will be understood that if a male member 3 is 50 not presented directly aligned with an opening 29 it will butt first of all against the chamfer 30 which will tend to lead it towards the said opening 29, then it will come to meet the flared openings of the tubular element 2 of the member 1 with an off-55 set with respect to the longitudinal axis of the latter. Continuing its progress, the member 3 will be inserted into the tubular element 2, the member 1 then aligning itself with respect to the male member 3. This alignment is allowed thanks to the possibilities of clearance of the springy feet 34, 40, 41 and 36, to the play provided between the steps 35, 42, 43 and 37 and the inner face of the wall 26, and likewise to the slope of the partitions 28.

The clearances of the members 1 are, however, 65 limited to the play provided between the partitions

28, in order to avoid damaging the springy feet 34, 40, 41 and 36, if the male member 3 are twisted beyond a certain threshold.

Flat male members have been shown, but of course they might be different.

Of course the invention is not restricted to the embodiment which has just been described and illustrated. Numerous modifications in detail might be applied to it without thereby departing from the 75 scope of the invention.

CLAIMS

1. An electrical connector of the type formed 80 from an insulating box having a front wall provided with openings and exhibiting a series of channels which emerge into the openings in the front wall and are intended each for receiving one female electrical contact member, each channel exhibiting retention members including two springy feet intended for cooperating with corresponding retention members on the electrical contact member in order to ensure the retention of the latter when they are put in place, wherein each channel

85 has a cross-sectional dimension greater than that of the electrical contact member and flares gradually from the front face towards the opposite end of the box, the said electrical contact member exhibiting a flared opening at the end of it turned towards the front face, the openings in the said front

90 face having dimensions less than those of the corresponding ends of the electrical contact members so that the latter are retained axially between the retention members on the springy feet and the 95 front face, but they can work sideways.

2. An electrical connector as in claim 1, wherein the edges of the openings in the front face include chamfers.

3. An electrical connector as in claim 1 or 2, 105 wherein each springy foot exhibits a step turned towards the front face, whilst each female member exhibits a corresponding lug on two opposite faces, the said lugs being situated in the vicinity of the free end of the female member.

4. An electrical connector as in any one of claims 1 to 3, wherein each female member is produced from a strip of metal which is a good conductor of electricity, suitably cut out and folded in order to exhibit a flat tubular element bordered by

115 two rounded portions, the end opposite to that provided with the flared opening including means of connection to an electrical conductor.

5. An electrical connector substantially as shown in the accompanying drawings and described herein with reference thereto.